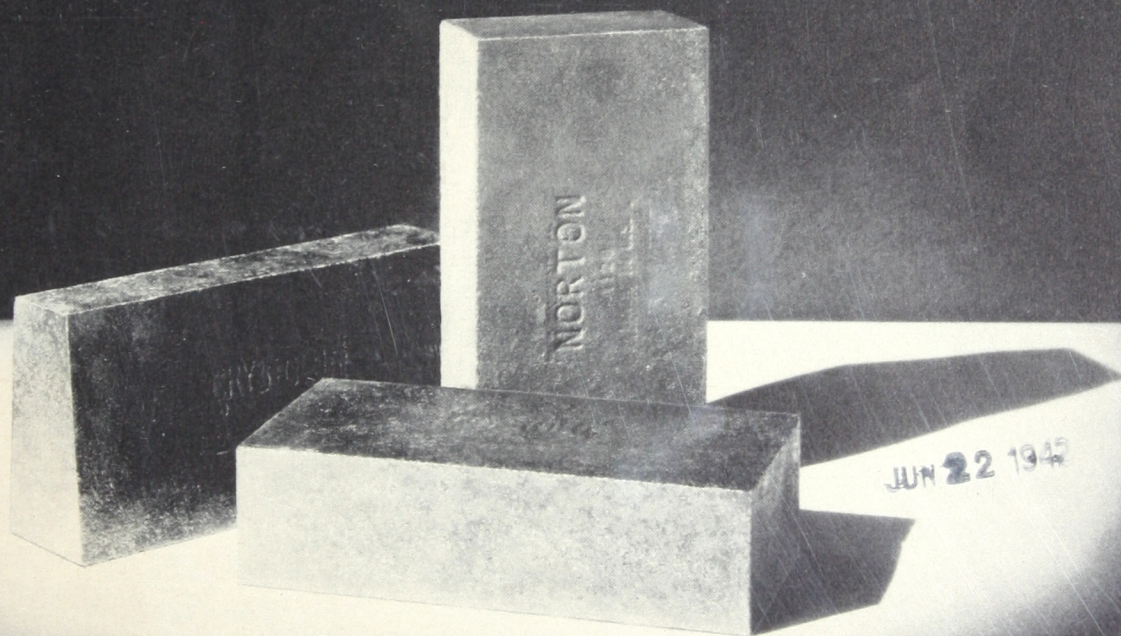


1260-14

Refractory Bricks

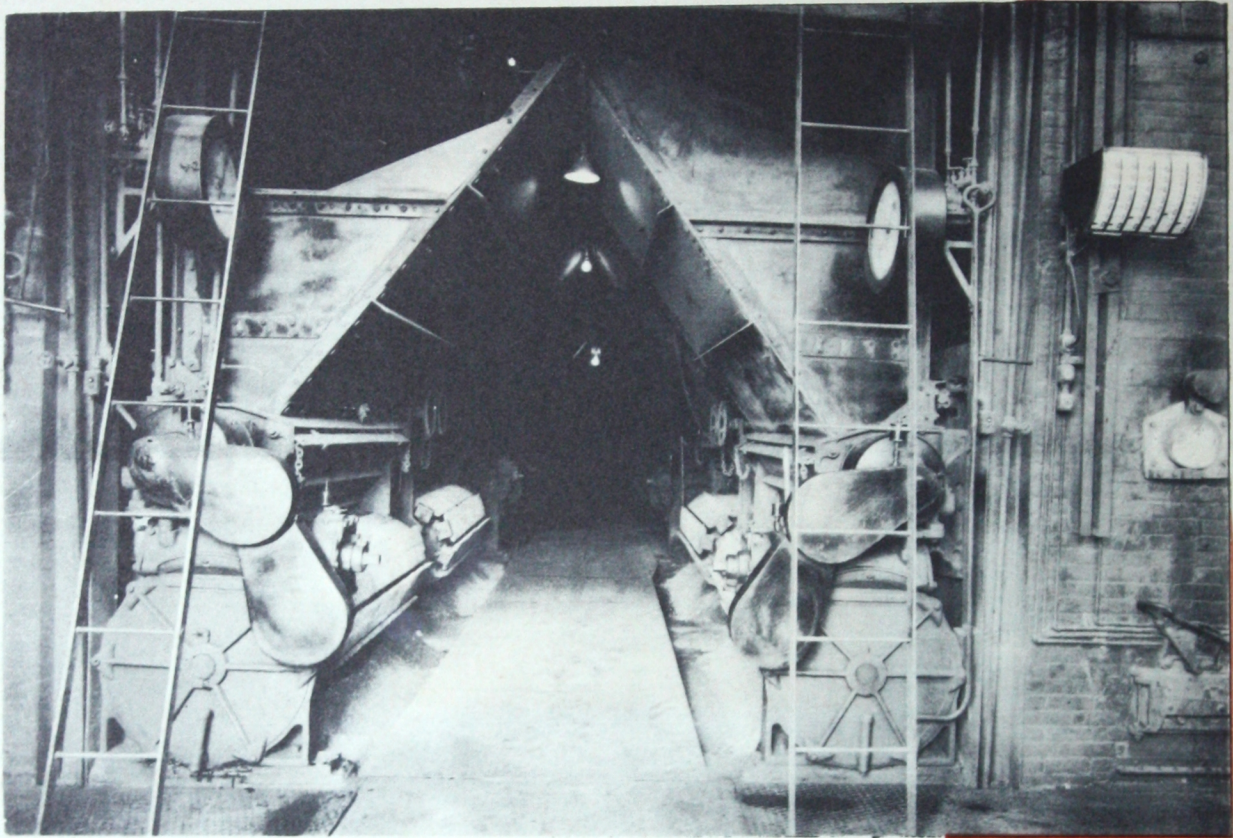
Alundum
TRADE MARK

Crystolon
TRADE MARK



NORTON

1260-14



NORTON
REFRACTORIES



Crystolon

The maintenance of the refractory linings in boiler furnaces is one of industry's serious problems. Repairs to boiler furnace walls are made with "lost time expense" which is a constant worry to boiler plant engineers.

Economical operation will be assured by the use of Crystolon Brick at the clinker line of coal fired boiler furnaces, in the bridge wall and front wall.

Crystolon Brick are silicon carbide brick of the highest quality. They more than meet the stringent *Grade A* requirements of the American Refractories Institute.

Crystolon Brick are made in all the standard sizes of the 9" series and are available for prompt shipment.

The standard brick made up in accordance with the special Norton formula RC 1129 have the following desirable characteristics which make them particularly suitable for use in boiler furnace walls:

1. Crystolon Brick contain an extremely high percentage of highest quality silicon carbide.
2. Crystolon Brick are remarkably true to size and shape thereby allowing installation with face to face joint.

3. **High refractoriness** is a quality imparted to the brick from the high quality silicon carbide used.

4. Crystolon Brick have great strength at elevated temperatures and also have a remarkable resistance to abrasion. Likewise their resistance to spalling is greater than that of any other commercial refractory material.

5. The resistance of Crystolon Brick to both the chemical action and physical action of molten slag is one of the most important qualities. They resist the penetration of the slag because of their great density. Slag may adhere to the surface to a very limited degree but what does stick is very easily removed without harming the surface of the wall. In other words, the original surface of the brick is retained for a long time.

It is not the first cost of a refractory brick that determines its value or indicates the wisdom of its use. Maintenance cost and lost time are the difficulties which must be overcome. Crystolon Brick will solve the maintenance problem.

Along the clinker line and at those points where wear and tear are severe, Crystolon

Brick will give long, economical service and will reduce maintenance time and expense.

The severe wear and tear to boiler furnace linings in plants which are run to high capacity can be resisted effectively only by the highest type of refractory brick. Crystolon (silicon carbide) Brick were developed especially to meet the requirements of this type of service.

Crystolon Brick include peculiar qualities which result in high resistance to abrasion and slag adhesion. By the use of Crystolon Brick, boilers can be run at higher ratings than would be possible with fireclay walls.

To get the best results the number of rows of Crystolon Brick used should be sufficient to more than cover

that portion of the wall which is in direct contact with the fuel. Five to six rows along

the clinker line have in general been found satisfactory. The brick should be laid up with dipped joints so as to present a condition as close to face to face as is possible. They should be laid as stretchers being tied in occasionally with headers. Cement used should be mixed with water to the consistency of heavy cream and brick face dipped in the cement.

Wherever the ordinary fireclay brick does not have refractory qualities sufficiently high to meet the conditions found in any type of furnace, Norton Company should be consulted for recommen-

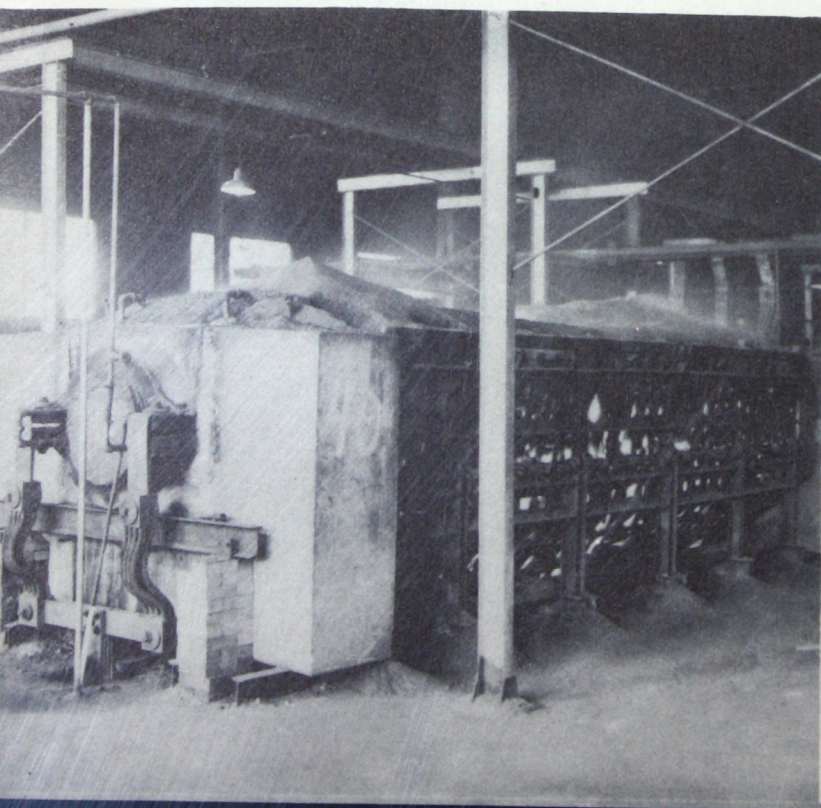
dations for a super refractory brick to overcome the difficulties of the situation.

It is necessary when installing super refractory brick to use refractory cements or mortars which are of equally high grade.

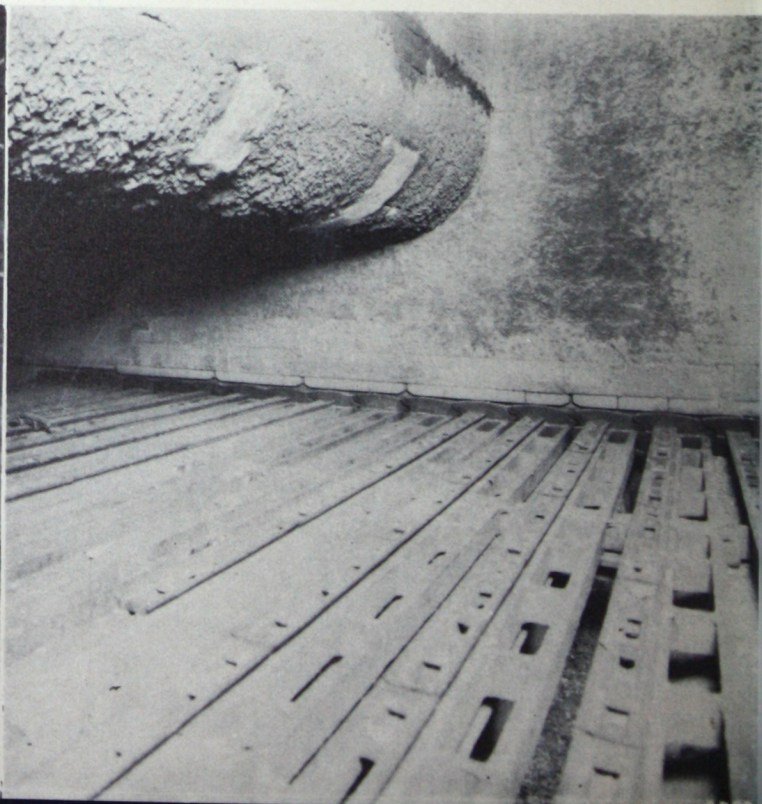
Alundum Cement RA 1019 and Crystolon Cement RC 1130 are recommended for laying up Crystolon Brick. Both Alundum and Crystolon materials are available in order to meet the preferences of engineers and the peculiar requirements of individual installations.

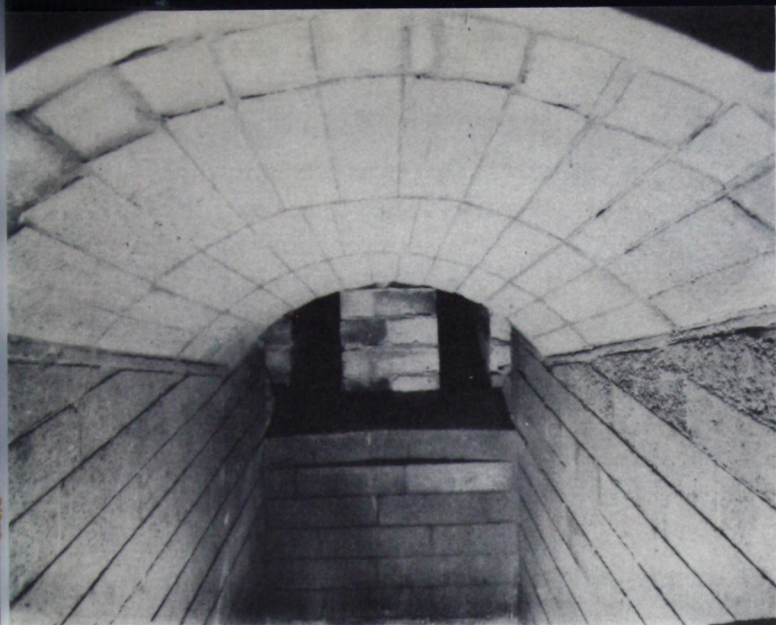
Both of these Norton cements are fine grained mixtures. RA 1019 is composed essentially of fused alumina, trade marked "Alundum." RC 1130 is composed essentially of silicon carbide, trade marked "Crystolon." Face to face joints can be assured by using either of these cements.

Resistance type furnace at the Norton electric furnace plant in which silica sand and coke are converted into silicon carbide (Crystolon)

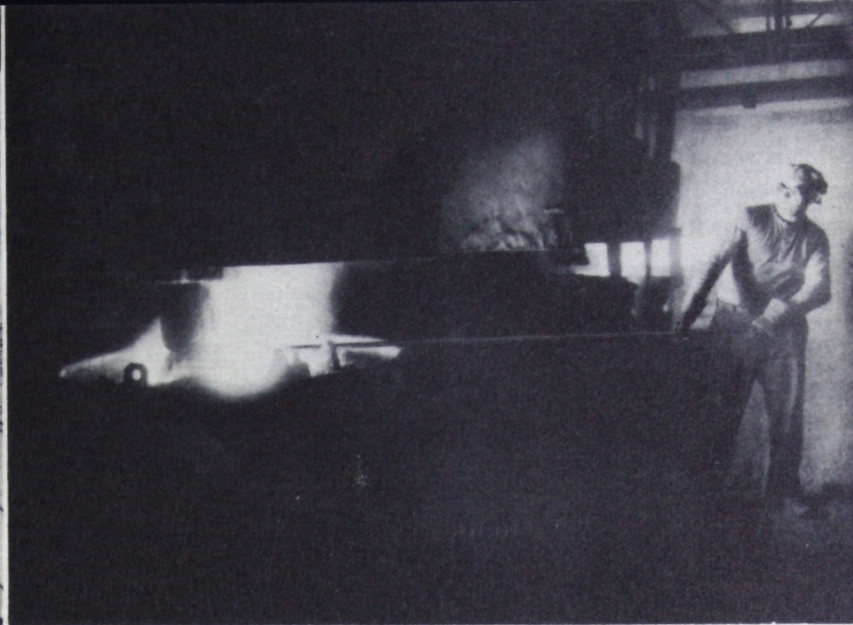


Crystolon Brick at the clinker line in furnaces reduce maintenance cost because of their high refractoriness, resistance to slag penetration and to abrasion





Alundum Brick (fused alumina) in the sides, back and crown of a ceramic kiln fire box



Arc type furnace in the Norton electric furnace plant fusing bauxite into fused alumina (Alundum)

Alundum

TRADE MARK

Another Norton product is a fused alumina brick of high refractoriness produced and sold under the trade name of "Alundum."

Alundum Brick are used in furnace walls and as supports in combustion chambers of continuous furnaces and kilns particularly in the ceramic and enameling fields. These brick are available in all of the sizes of the standard 9" series and can be shipped promptly from stock.

Typical examples of constructions where Alundum Brick should be used are the following:

1. For piers or supports under muffles in enameling, annealing and other types of oil or gas fired furnaces.
2. In kilns of the continuous type as Dressler, Holcroft and Robertson kilns.
3. In fireboxes of periodic kilns and also in the kiln chambers of these kilns.

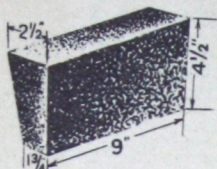
4. RA 1048 is a brick mixture which provides a chemically stable, non-spalling brick which stands up under intermittent firing.

Alundum Brick have high heat conductivity, are chemically inactive, show almost no electrical conductivity, and are highly refractory.

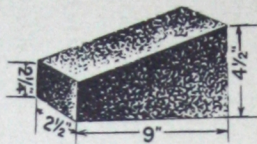
These are composed principally of electrically fused alumina and are made up in shapes of the 9" series. They give the best service in furnaces and kilns of the continuous type; especially in kilns where the heating cycle is slow and gradual; or in constructions which are kept pretty well up to heat over weekends or holidays. This is true in cases of coal, oil or gas fuel. For electrically heated installations they are excellent because alumina is a poor conductor of electricity even at elevated temperatures.

Standard Shapes of Alundum and Crystolon Bricks

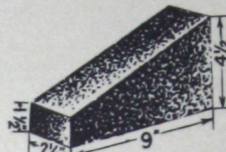
of the complete 9-inch series carried in stock



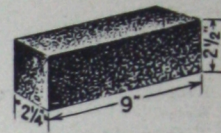
No. 2 Arch Brick



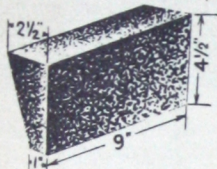
No. 4 Key Brick



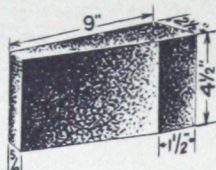
End Skew



Soap Brick



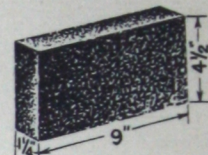
No. 3 Arch Brick



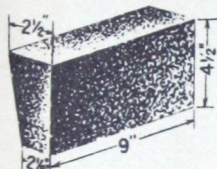
No. 1 Neck Brick



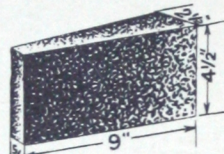
Feather Edge



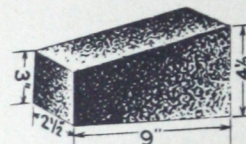
Split Brick



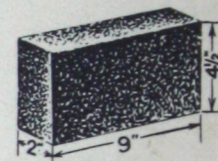
No. 1 Arch Brick



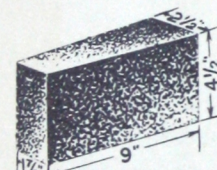
No. 3 Neck Brick



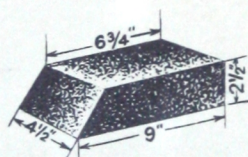
No. 3 Key Brick



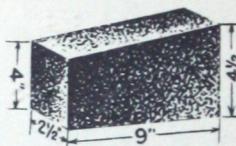
2-In. Brick



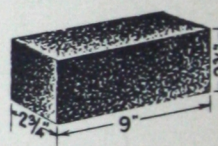
No. 1 Wedge Brick



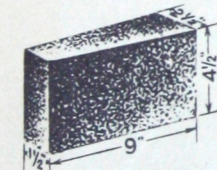
End Skew



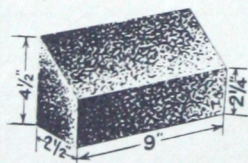
No. 1 Key Brick



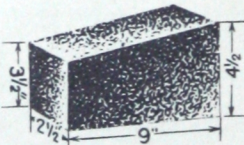
Checker



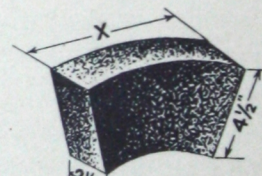
No. 2 Wedge Brick



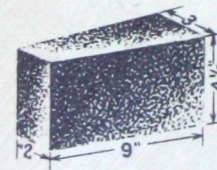
Side Skew



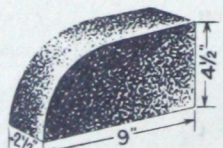
No. 2 Key Brick



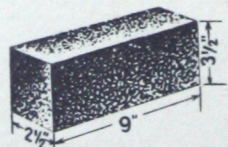
Circle Brick



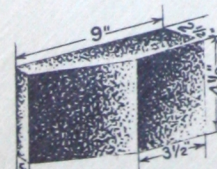
No. 3 Wedge Brick



Jamb Brick



Small 9-In. Brick

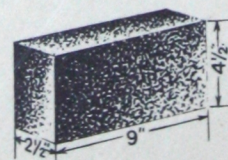


No. 2 Neck Brick

9-in. Straight
9 x 4 1/2 x 2 1/2 in.

Other Straights
9 x 6 3/4 x 2 1/2 in.
13 1/2 x 4 1/2 x 2 1/2 in.

Half Brick
4 1/2 x 4 1/2 x 2 1/2 in.



9-In. Straight Brick

24-in. Circle Brick
24 in. inside diam., 33 in.
outside diam. 12 to a circle,
(8 1/8 in. - 6 1/8 in.) x 4 1/2 in.
x 2 1/2 in.

36-in. Circle Brick
36 in. inside diam., 45 in.
outside diam. 16 to a circle,
(8 1/8 in. - 6 1/8 in.) x 4 1/2 in.
x 2 1/2 in.

48-in. Circle Brick
48 in. inside diam., 57 in.
outside diam. 20 to a circle,
(8 1/8 in. - 7 1/8 in.) x 4 1/2 in.
x 2 1/2 in.

60-in. Circle Brick
60 in. inside diam., 69 in.
outside diam. 24 to a circle,
(8 1/8 in. - 7 3/4 in.) x 4 1/2 in.
x 2 1/2 in.

72-in. Circle Brick
72 in. inside diam., 81 in.
outside diam. 28 to a circle,
(9 in. - 8 in.) x 4 1/2 in. x
2 1/2 in.

84-in. Circle Brick
84 in. inside diam., 93 in.
outside diam. 32 to a circle,
(9 1/2 in. - 8 1/2 in.) x 4 1/2 in.
x 2 1/2 in.

NOTE: An allowance of 1/8 in. is made in the brick dimensions for joints. The dimension "X" varies with the different sizes of circles so that the given number of bricks will lay up without cutting.

Alundum and Crystolon Refractory Bricks

Standard 9" Shapes

Standard 9" straight	9 x 4½ x 2½"
Standard Splits	9 x 4½ x 1¾"
No. 1 Arch	9 x 4½ x (2½-2½")
No. 2 Arch	9 x 4½ x (2½-1¾")
No. 3 Arch	9 x 4½ x (2½-1")
No. 1 Wedge	9 x 4½ x (2½-1½")
No. 2 Wedge	9 x 4½ x (2½-1½")
No. 3 Wedge	9 x 4½ x (3-2")
Small 9"	9 x 3½ x 2½"
Soap	9 x 2½ x 2½"
Half Brick	4½ x 4½ x 2½"
Checker	9 x 2¾ x 2¾"
2" Brick	9 x 4½ x 2"
No. 1 Key	9 x (4½-4") x 2½"
No. 2 Key	9 x (4½-3½") x 2½"
No. 3 Key	9 x (4½-3") x 2½"
No. 4 Key	9 x (4½-2½") x 2½"
No. 1 Neck	9 x 4½ x 3½ x 2½ x ½"
No. 2 Neck	9 x 4½ x 2½ x 1½ x ½"
No. 3 Neck	9 x 4½ x (2½-½")
Feather Edge	9 x 4½ x (2½-½")
Edge Skew	9 x (4½-1½") x 2½"
End Skew	(9-6¾") x 4½ x 2½"
Side Skew	9 x (4½-2¼") x 2½"
Jamb Brick	9 x 4½ x 2½"
Circle Brick	24", 36", 48", 60", 72", 84"

Alundum Bricks are extremely refractory and contain a high percentage of electrically fused alumina (aluminum oxide). The standard 9 x 4½ x 2½ weighs 11 pounds.

Crystolon Bricks are extremely refractory and contain a high percentage of crystalline silicon carbide. The standard 9 x 4½ x 2½ weighs 9 pounds.

TABLE OF 9-INCH ARCH BRICK

Inside Diameter	Shapes Required				Total
	No. 3 Arch	No. 2 Arch	No. 1 Arch	Straight	
0 ft. 6 in.	19				19
1 " 0 "	12	15			27
1 " 6 "	4	30			34
1 " 9 "		38			38
2 " 0 "		34			34
2 " 6 "		26	8		34
3 " 0 "		19	23		42
3 " 6 "		11	53		64
4 " 0 "		4	68		72
4 " 3 "			76		76
4 " 6 "			76	4	80
5 " 0 "			76	11	87
5 " 6 "			76	19	95
6 " 0 "			76	27	103
6 " 6 "			76	34	110
7 " 0 "			76	42	118
7 " 6 "			76	49	125
8 " 0 "			76	57	133
8 " 6 "			76	64	140
9 " 0 "			76	72	148
9 " 6 "			76	79	155
10 " 0 "			76	87	163
10 " 6 "			76	94	170
11 " 0 "			76	102	178
11 " 6 "			76	109	185
12 " 0 "			76	117	193

TABLE OF 9-INCH WEDGE BRICK

Inside Diameter	Shapes Required				Total
	No. 2 Wedge	No. 1 Wedge	Straight		
2 ft. 3 in.	57				57
3 " 0 "	49	11			60
3 " 6 "	38	30			68
4 " 0 "	26	50			76
4 " 6 "	12	71			83
5 " 0 "		91			91
5 " 6 "		91	15		106
6 " 0 "		91	23		114
6 " 6 "		91	30		121
7 " 0 "		91	38		129
7 " 6 "		91	45		136
8 " 0 "		91	53		144
8 " 6 "		91	60		151
9 " 0 "		91	68		159
9 " 6 "		91	76		167
10 " 0 "		91	83		174
10 " 6 "		91	91		182
11 " 0 "		91	98		189
11 " 6 "		91	106		197
12 " 0 "		91	113		204
12 " 6 "		91	121		212
13 ft. 0 in.		91	128		219
13 " 6 "		91	136		227
14 " 0 "		91	143		234
14 " 6 "		91	151		242
15 " 0 "		91	158		249
15 " 6 "		91	166		257
16 " 0 "		91	173		264
16 " 6 "		91	181		272
17 " 0 "		91	188		279
17 " 6 "		91	196		287
18 " 0 "		91	203		294

TABLE OF 9-INCH WEDGE BRICK

Inside Diameter	Shapes Required (Continued)				Total
	No. 2 Wedge	No. 1 Wedge	Straight		
18 " 6 "		91	211		302
19 " 0 "		91	218		309
19 " 6 "		91	226		317
20 " 0 "		91	233		324
20 " 6 "		91	241		332
21 " 0 "		91	248		339
21 " 6 "		91	256		347
22 " 0 "		91	263		354
22 " 6 "		91	271		362
23 " 0 "		91	278		369
23 " 6 "		91	286		377
24 " 0 "		91	293		384
24 " 6 "		91	301		392
25 " 0 "		91	308		399
25 " 6 "		91	316		407
26 " 0 "		91	323		414
26 " 6 "		91	331		422
27 " 0 "		91	338		429
27 " 6 "		91	346		437

TABLE OF 9-INCH KEY BRICK

Inside Diameter	Shapes Required					Total
	No. 4 Key	No. 3 Key	No. 2 Key	No. 1 Key	Straight	
1 ft. 6 in.	25					25
2 " 0 "	16	13				29
2 " 6 "	9	25				34
3 " 0 "		38				38
3 " 6 "		29	13			42
4 " 0 "		21	25			46
4 " 6 "		12	38			50
5 " 0 "		5	50			55
5 " 6 "			57			57
6 " 0 "			55	4		59
6 " 6 "			50	13		63
7 " 0 "			46	21		67
7 " 6 "			42	29		71
8 " 0 "			38	38		76
8 " 6 "			34	46		80
9 " 0 "			29	55		84
9 " 6 "			25	63		88
10 " 0 "			21	71		92
10 ft. 0 in.			17	80		97
11 " 0 "			13	88		101
11 " 6 "			9	96		105
12 " 0 "			4	105		109
12 " 6 "				113		113
13 " 0 "				113	4	117
13 " 6 "				113	9	122
14 " 0 "				113	13	126
14 " 6 "				113	17	130
15 " 0 "				113	21	134
15 " 6 "				113	25	138
16 " 0 "				113	30	143
16 " 6 "				113	34	147
17 " 0 "				113	38	151
17 " 6 "				113	42	155
18 " 0 "				113	46	159
18 " 6 "				113	50	163
19 " 0 "				113	55	168
19 " 6 "				113	59	172
20 " 0 "				113	63	176
20 " 6 "				113	67	180
21 " 0 "				113	71	184
21 " 6 "				113	76	189
22 " 0 "				113	80	193
22 " 6 "				113	84	197
23 " 0 "				113	88	201
23 " 6 "				113	92	205
24 " 0 "				113	97	210
24 " 6 "				113	101	214
25 " 0 "				113	105	218
25 " 6 "				113	109	222
26 " 0 "				113	113	226
26 " 6 "				113	117	230
27 " 0 "				113	122	235
27 " 6 "				113	126	239
28 " 0 "				113	130	243
28 " 6 "				113	134	247
29 " 0 "				113	138	251
29 " 6 "				113	143	256
30 " 0 "				113	147	260
30 " 6 "				113	151	264
31 " 0 "				113	155	268
31 " 6 "				113	159	272
32 " 0 "				113	163	276
32 " 6 "				113	168	281
33 " 0 "				113	172	285
33 " 6 "				113	176	289
34 " 0 "				113	180	293
34 " 6 "				113	184	297
35 " 0 "				113	189	302
35 " 6 "				113	193	306

TABLE OF STANDARD 9-INCH CIRCLE BRICK

Inside Diameter	Shapes Required					
	24-inch Circle	36-inch Circle	48-inch Circle	60-inch Circle	72-inch Circle	84-inch Circle
2 ft. 0 in.	12					
2 " 6 "	9					
3 " 0 "	6	8				
3 " 6 "	3	12				
4 " 0 "		16				
4 " 6 "		11				
5 " 0 "		7	11			
5 " 6 "		3	16			
6 " 0 "			20			
6 " 6 "			14			
7 " 0 "			9	13		
7 " 6 "			4	19		
8 " 0 "				24		
8 " 6 "				17		
9 " 0 "				15	8	
9 " 6 "				11	15	
10 " 0 "				9	22	
10 " 6 "					28	
11 " 0 "					21	8
11 " 6 "					14	16
12 " 0 "					7	24
12 " 6 "						32

NORTON PRODUCTS

Abrasives

Abrasive Grain for:
Polishing
Lepping
Paper and Cloth Manufacture
Glass Grinding
Pressure Blasting
Levigated Alumina

Norbide—Norton Boron Carbide, the hardest material ever made commercially by man. Uses:
(a) An extremely hard abrasive
(b) Metallurgical compound
(c) Molded products

Bonded Abrasives

Grinding Wheels
Bricks, Sticks, Blocks and Segments
Cylinder Hones
Sharpening Stones
Mounted Wheels and Points

Pulpstones

for Pocket, Magazine and Continuous Grinders

Refractories and Porous Mediums

Raw Refractory Materials
Electrically Fused Magnesia
Laboratory Ware
RR. Alumina Grain
Cements
Kiln Furniture
Furnace Linings
Bricks, Blocks and Plates

Porous Plates, Tubes and Diaphragms

Machinery

Universal Tool and Cutter Grinding Machines
Precision Grinding and Lepping Machinery
Dynamic Balance Indicating Machines

Norton Floors

Alumina Floor and Stair Tile,
Ceramic Mosaic Tile, and
Aggregates

BEHR-MANNING PRODUCTS

Abrasive Papers and Cloths in Sheets, Rolls, Discs
and Belts

Mineral Coatings

Natural Abrasives: Garnet, Flint, Emery
Artificial Abrasives—Aluminum Oxide, trade-
marked: Adalox—Durundum—Metolite
Silicon Carbide, trade-marked: Durite—Speed-
grits—Speed-wet (waterproof)
Pouncing Paper
Buffing Paper

Gasket Material

Life Guard Cushion Rug Holder